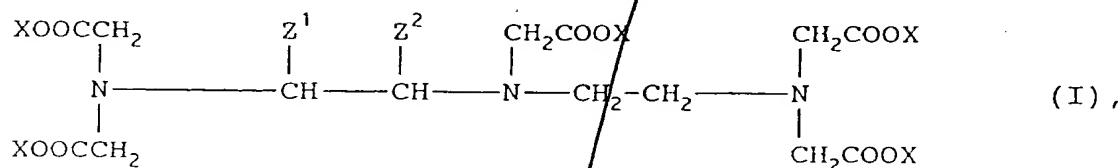


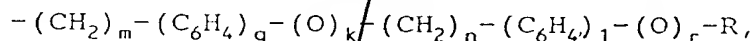
WHAT IS CLAIMED IS:

1. A compound of the formula



wherein

Z^1 and Z^2 in each case independently are the residue



wherein

m and n independently are 0-20,

k , l , q and r each independently is 0 or 1,

R is hydrogen, optionally OR^1 -substituted

C_1 - C_5 -alkyl or CH_2COOR^1 ,

R^1 is hydrogen, C_1 - C_6 -alkyl or benzyl,

X is a hydrogen atom and/or a metal ion equivalent of an element of atomic number 21-29, 42, 44 or 57-83, with the provisos that at least two of the substituents X represent a metal ion equivalent; that one of the substituents Z^1 and Z^2 is hydrogen and the other is not hydrogen; and that when n and l each are 0, then k and r are not each simultaneously 1; that $-(\text{O})_r-\text{R}$ is not $-\text{OH}$; and that Z^1 and Z^2 are not $-\text{CH}_2-\text{C}_6\text{H}_4-\text{O}-\text{CH}_2-\text{COOCH}_2\text{C}_6\text{H}_5$ or $-\text{CH}_2-\text{C}_6\text{H}_4-\text{O}-(\text{CH}_2)_5-\text{COOCH}_2\text{C}_6\text{H}_5$, or a physiologically acceptable salt thereof with an inorganic and/or organic base, an amino acid or an amino acid amide.

510 1001, 5057302
5059412
49

F 2. A ^{method}~~compound~~ of claim ~~1~~¹¹, wherein Z^1 is hydrogen and Z^2 is $-(CH_2)_m-(C_6H_4)_q-(O)_k-(CH_2)_n-(C_6H_4)_i-(O)_r-R$, which is not hydrogen.

F 3. A ^{method}~~compound~~ of claim ~~2~~¹¹, wherein Z^2 is hydrogen and Z^1 is $-(CH_2)_m-(C_6H_4)_q-(O)_k-(CH_2)_n-(C_6H_4)_i-(O)_r-R$, which is not hydrogen.

a F 4. A ^{method}~~compound~~ of claim ~~3~~¹¹, wherein Z^1 is
 $-CH_2-C_6H_4-OCH_3$, ~~$-CH_2-C_6H_5$~~ , $-CH_2-C_6H_4-O-CH_2-C_6H_4-OCH_3$,
 $-CH_2-O-CH_2-C_6H_5$, $-CH_2-C_6H_4-O-CH_2-COOH$, $-CH_2-C_6H_4-OC_2H_5$,
 $-CH_2-C_6H_4-OC_4H_9$ or $-CH_2-C_6H_4-O-CH_2-C_6H_5$.

a F 5. A ^{method}~~compound~~ of claim ~~4~~¹¹, wherein Z^2 is
 $-CH_2-C_6H_4-OCH_3$, ~~$-CH_2-C_6H_5$~~ , $-CH_2-C_6H_4-O-CH_2-C_6H_4-OCH_3$,
 $-CH_2-O-CH_2-C_6H_5$, $-CH_2-C_6H_4-O-CH_2-COOH$, $-CH_2-C_6H_4-OC_2H_5$,
 $-CH_2-C_6H_4-OC_4H_9$ or $-CH_2-C_6H_4-O-CH_2-C_6H_5$.

Sup #2 6. A compound of claim 1, wherein at least one X is Gd.

7. A compound of claim 4, wherein at least one X is Gd.

8. A compound of claim 5, wherein at least one X is Gd.

9. Gadolinium complex of 3,6,9-triaza-3,6,9-tris(carboxymethyl)-4-(4-methoxybenzyl)undecanedioic acid;

europium complex of 3,6,9-triaza-3,6,9-tris(carboxymethyl)-4-(4-methoxybenzyl)undecanedioic acid;

iron(III) complex of 3,6,9-triaza-3,6,9-tris(carboxymethyl)-4-(4-methoxybenzyl)undecanedioic acid;

bismuth complex of 3,6,9-triaza-3,6,9-tris(carboxy-

TO

methyl)-4-(4-methoxybenzyl)undecanedioic acid;
gadolinium complex of 3,6,9-triaza-3,6,9-tris(carboxy-
methyl)-5-(4-methoxybenzyl)undecanedioic acid;
gadolinium complex of 3,6,9-triaza-3,6,9-tris(carboxy-
methyl)-4-[4-(4-methoxybenzyloxy)benzyl]undecanedioic
acid;
gadolinium complex of 3,6,9-triaza-3,6,9-tris(carboxy-
methyl)-4-benzylundecanedioic acid;
ytterbium complex of 3,6,9-triaza-3,6,9-tris(carboxy-
methyl)-4-benzylundecanedioic acid;
gadolinium complex of 3,6,9-triaza-3,6,9-tris(carboxy-
methyl)-4-benzyloxymethylundecanedioic acid;
gadolinium complex of 3,6,9-triaza-3,6,9-tris(carboxy-
methyl)-4-(4-carboxymethoxybenzyl)undecanedioic acid;
gadolinium complex of 3,6,9-triaza-3,6,9-tris(carboxy-
methyl)-4-(4-ethoxybenzyl)undecanedioic acid;
europium complex of 3,6,9-triaza-3,6,9-tris(carboxy-
methyl)-4-(4-ethoxybenzyl)undecanedioic acid;
iron complex of 3,6,9-triaza-3,6,9-tris(carboxy-
methyl)-4-(4-ethoxybenzyl)undecanedioic acid;
gadolinium complex of 3,6,9-triaza-3,6,9-tris(carboxy-
methyl)-4-(4-butoxybenzyl)undecanedioic acid;
europium complex of 3,6,9-triaza-3,6,9-tris(carboxy-
methyl)-4-(4-butoxybenzyl)undecanedioic acid;
iron complex of 3,6,9-triaza-3,6,9-tris(carboxy-
methyl)-4-(4-butoxybenzyl)undecanedioic acid;
gadolinium complex of 3,6,9-triaza-3,6,9-tris(carboxy-
methyl)-4-(4-benzyloxybenzyl)undecanedioic acid;
europium complex of 3,6,9-triaza-3,6,9-tris(carboxy-
methyl)-4-(4-benzyloxybenzyl)undecanedioic acid;
iron complex of 3,6,9-triaza-3,6,9-tris(carboxy-
methyl)-4-(4-benzyloxybenzyl)undecanedioic acid.
each a compound of claim 1.

10. A pharmaceutical composition comprising a compound of claim 1 and a pharmaceutically acceptable carrier.

11. A method of enhancing an NMR image comprising administering to a patient a compound of claim 1, wherein at least one X is of atomic number 21-29, 42, 44 or 58-70.

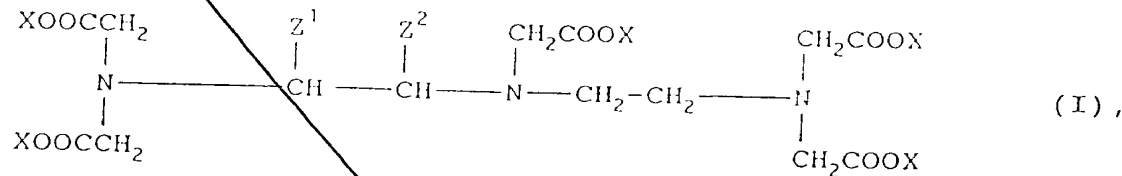
12. A method of enhancing an X-ray image comprising administering to a patient a compound of claim 1, wherein at least one X is of atomic number 21-29, 42, 44 or 57-83.

13. A method of claim 11, wherein the renal system ~~or the hepatobiliary system~~ is imaged.

14. A method of claim 12 wherein ~~the renal system~~ ~~or the hepatobiliary system~~ is imaged.

15. In a method of conducting radiation therapy of a patient comprising administering a radioactive metal ion to the patient, the improvement wherein the radioactive metal ion is administered in the form of a compound of claim 1.

16. A method of enhancing an NMR image of the GI tract of a patient comprising administering a compound of the formula



wherein

Z^1 and Z^2 in each case independently are the residue $-(\text{CH}_2)_m-(\text{C}_6\text{H}_4)_n-(\text{O})_k-(\text{CH}_2)_n-(\text{C}_6\text{H}_4)_1-(\text{O})_r-\text{R},$

51

wherein

m and n independently are 0-20,

k, l, q and r each independently is 0 or 1,

R is hydrogen, optionally OR¹-substituted

C₁-C₆-alkyl or CH₂COOR¹,

R¹ is hydrogen, C₁-C₆-alkyl or benzyl,

X is a hydrogen atom and/or a metal ion equivalent of an element of atomic number 21-29, 42, 44 or ⁵⁸78, ⁵⁹83, with the provisos that at least two of the substituents X represent a metal ion equivalent; that one of the substituents Z¹ and Z² is hydrogen and the other is not hydrogen; and that when n and l each are 0, then k and r are not each simultaneously 1, or a physiologically acceptable salt thereof with an inorganic and/or organic base, an amino acid or an amino acid amide.

2 Sub
1-2
contd

~~add
A+B~~

~~add B1~~

~~add
B1+D1+E3~~

add
G2

add
H1

add
I37

add
K27